National Water Assessments

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National Water Assessments

- National Aquatic Resource Surveys
  - EPA/State Partnership to assess the nation's waters
- The National Water Quality Monitoring Network for U.S. Coastal Waters and their Tributaries
  - Design led by the National Water Quality Monitoring Council to meet charge of Ocean Action Plan

Critiques of Water Monitoring Programs

- GAO, National Academy of Science, National Academy of Public Administration
  - States do not have data needed to make decisions
    - Set water quality standards
    - Determine protection and clean up goals
    - Evaluate effectiveness of permits and management measures
  - EPA and States cannot make statistically valid statements about water quality condition in U.S.

Monitoring Initiative Objectives

- Strengthen State monitoring programs by providing new funds to states to develop and implement monitoring strategies
  - Enhance access to and use of data
  - Integrate tools to support more efficient use of monitoring resources
- Assess the condition of all of the Nation's waters and changes over time
  - Create partnership among federal, state and others to cost-effectively survey the Nation's waters
  - Provide statistically-valid information on the extent of water quality problems and key stressors across the country to support decision making

Purpose of National Aquatic Resource Surveys

- **Meet Clean Water Act requirement to report on the condition of waters of the U.S.**
  - Unbiased estimate of condition based on randomly selected, representative subset of waters
  - Report on core indicators with regional supplements
  - Standardized or comparable methods
- **Provide information on key questions:**
  - Extent of waters supporting healthy ecosystems, recreation?
  - Extent of resource affected by key water quality problems/stressors?

Survey Components

- Probability-based sampling design
- Core indicators
- Standardized sampling protocols
- Field logistics
- Quality assurance
- Reference condition
- Analyses

Biological Indicators

- Lakes (2007) – zooplankton, phytoplankton, sediment diatoms, macroinvertebrates
- Rivers and streams (2008/9) – fish, macroinvertebrates, periphyton, phytoplankton
- Coastal (2010) – macroinvertebrates and possibly others, the team is planning an indicator meeting this spring
- Wetlands (2011) – vegetation and others TBD, the team is planning an indicator meeting this summer

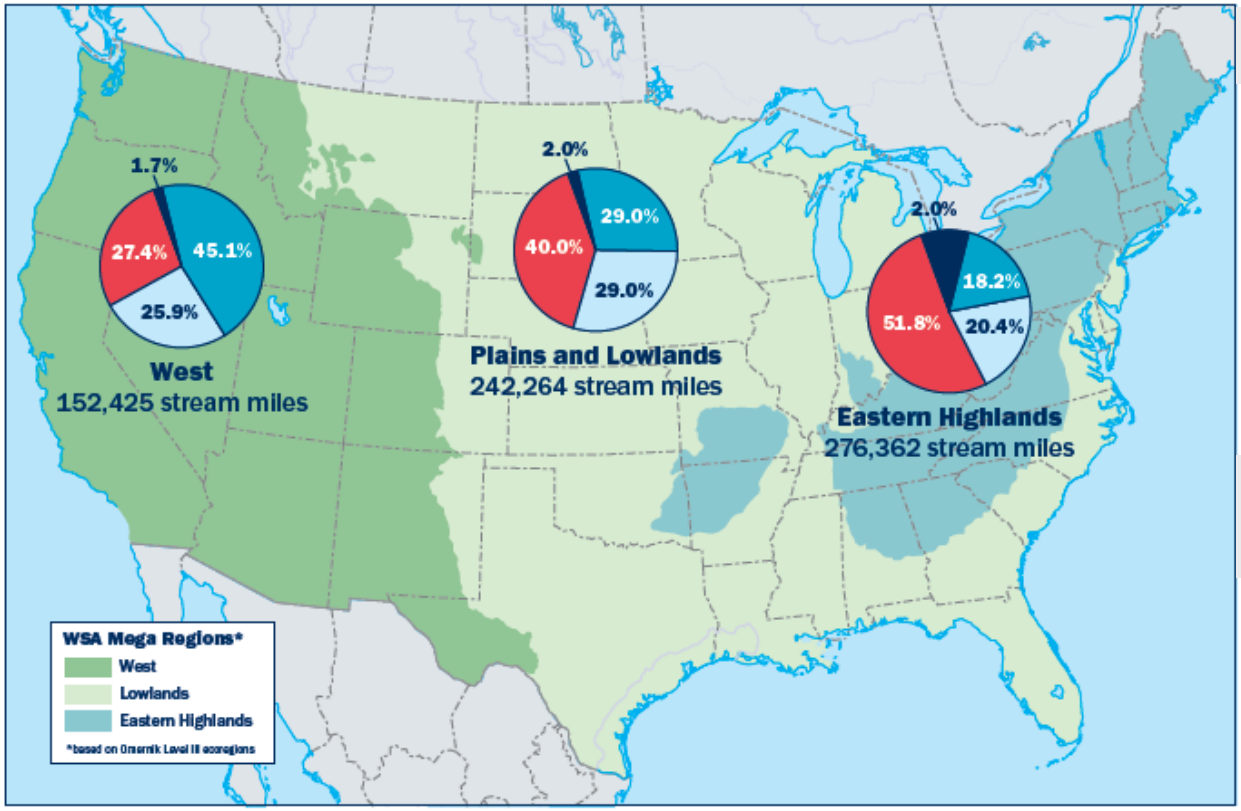
Additional Survey Indicators

- Trophic status
  - Water chemistry (nutrients, anions, cations, alkalinity, etc.)
  - Chlorophyll a and other pigments
  - Clarity (secchi disk, turbidity, TSS, color)
- Stressors
  - Nutrients
  - ANC
  - Excess sedimentation
  - Salinity
- Recreational
  - Enterococci
  - Microcystin
- Physical Habitat
- Other measures
  - Lake area, morphometry
  - Watershed characteristics
  - Mercury in sediment (for lakes)

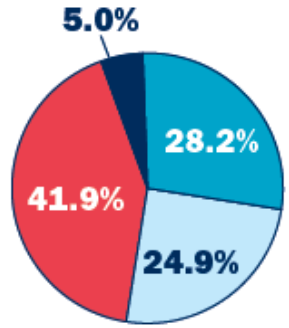
How will we use the data?

- Describe biological condition of resource nationally and regionally, for example
  - % in good, fair, poor condition based on interpretation of biological assemblages
- Describe extent of waters affected by key stressors, for example
  - % with elevated nutrient levels
  - % acidic
  - % with pathogen levels that may pose concerns for recreational use

Wadeable Streams Assessment 2006



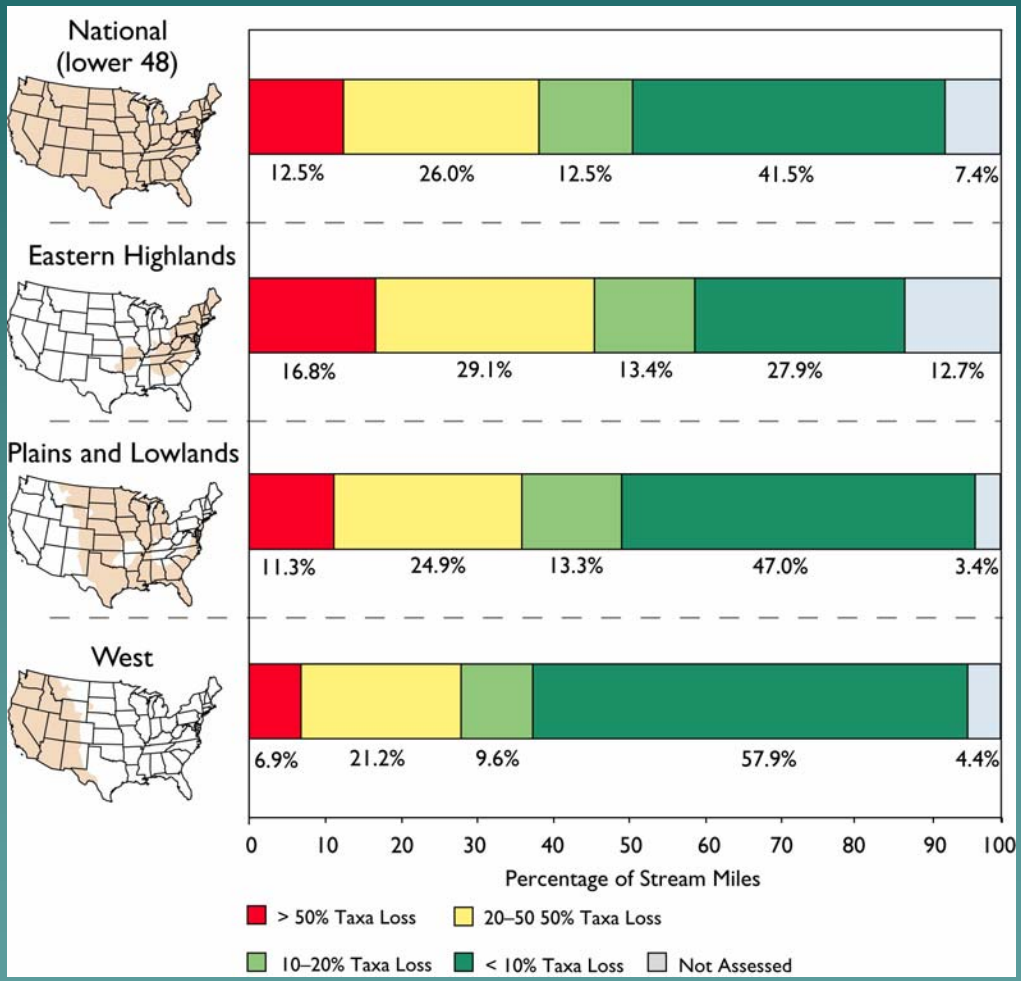
National Summary



Biological Condition of Wadeable Streams

Good
Fair
Poor
Not Assessed

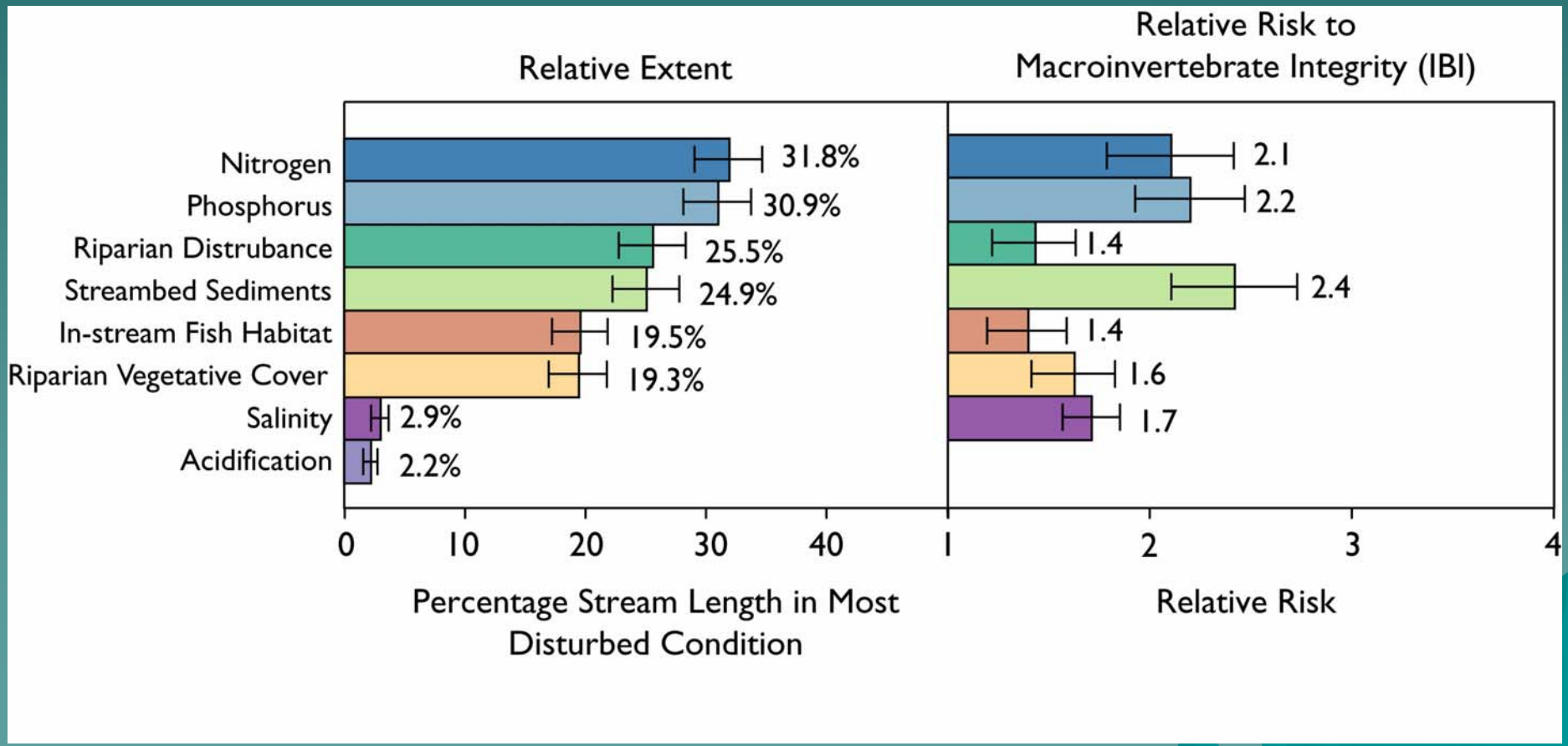
Biological Condition - Taxa Loss



Across the country, 42 percent of streams have retained 90 percent of their expected taxa.

Taxa are groups of organisms, such as family, genus, species.

WSA Stressors and their Relative Risk to Biological Condition

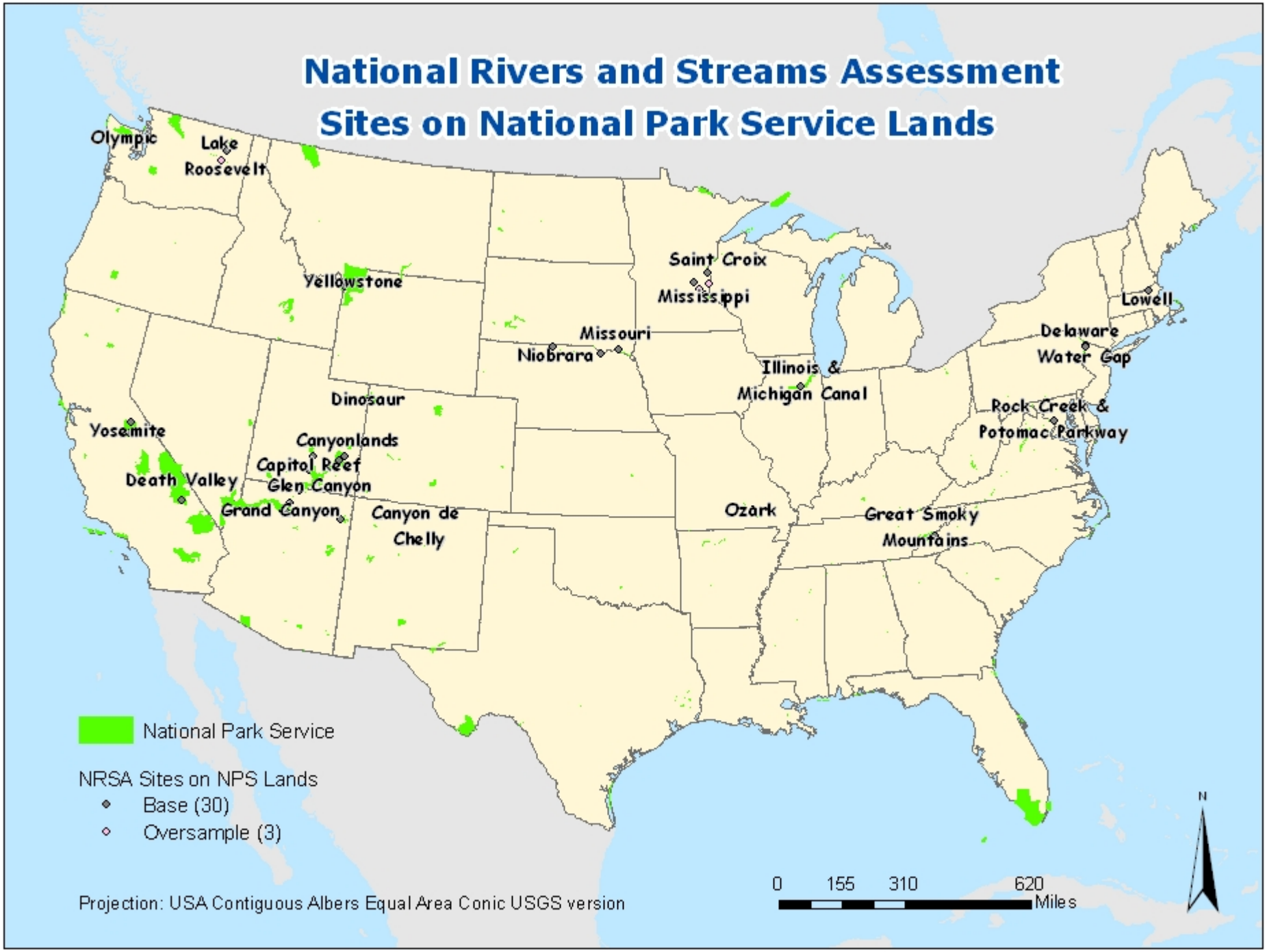


National Aquatic Resource Survey Schedule

	2006	2007	2008	2009	2010	2011	2012
Lakes	Design	Field	Lab,data	Report*	Research	Design	Field
Rivers	Research	Design	Field	Lab,data	Report	Research	Design
Streams	Report	Research	Design	Field	Lab,data	Report	Research
Coastal			Research	Design	Field	Lab,data	Report
Wetlands	Research	Research	Research	Research	Design	Field	Lab,data

Areas of Collaboration

- Design requirements
- Core indicators
- Standardized protocols and training
- Sampling and data processing
- Identification of supplemental reference sites
- Data analysis and interpretation
- Feedback


National Rivers and Streams Assessment
Sites on National Park Service Lands
Olympic
Lake Roosevelt
Yellowstone
Saint Croix
Mississippi
Missouri
Niobrara
Lowell
Delaware Water Gap
Illinois & Michigan Canal
Rock Creek & Potomac Parkway
Dinosaur
Yosemite
Canyonlands
Capitol Reef
Glen Canyon
Death Valley
Grand Canyon
Canyon de Chelly
Ozark
Great Smoky Mountains
National Park Service
NRSA Sites on NPS Lands
Base (30)
Oversample (3)
Projection: USA Contiguous Albers Equal Area Conic USGS version
0 155 310 620
Miles
N

The National Water Quality Monitoring Network for U.S. Coastal Waters and their Tributaries

Network Origins

- U.S. Commission on Ocean Policy
  - **Chapter 15, Creating a National Monitoring Network**
- U.S. Ocean Action Plan
  - **Advancing our Understanding of the Oceans, Coasts, and Great Lakes**
  - **Create a National Water Quality Monitoring Network**

Coastal Water Quality Concerns

- Widespread nutrient over-enrichment
  - Oxygen depletion
  - Loss of sea grass beds
  - Harmful algal blooms
- Toxic contamination and pathogens
  - Closed beaches and shellfish beds
  - Fish and shellfish consumption advisories
- Habitat alterations
  - Wetland loss
  - Invasive species

Resource Compartments

- Estuaries
- Near-shore waters
- Off-shore waters
- Great Lakes
- Coastal beaches
- Wetlands
- Flow and flux from
  - Rivers
  - Ground water
  - Atmospheric deposition

Design Features

- Links nine resource compartments
  - inland, coastal, and ocean monitoring
  - Comparable and quality-controlled data
  - Data management and access
- Resolution at several scales
- Includes targeted and probability based monitoring
- Relevant to management issues
- Builds on existing programs

Multi-year Effort

- Phase I - **Network Design** **(FY 05 & 06)**
- Phase II - Develop and carry out **Pilot Studies** **(FY 07 & 08)**
- Phase III - **Demonstration Projects** **(FY 08 & 09)**
- Phase IV – **Implementation**; fill gaps and provide necessary enhancements to existing monitoring programs **(FY 10 and beyond)**

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